CARNEGIE

MAGAZINE

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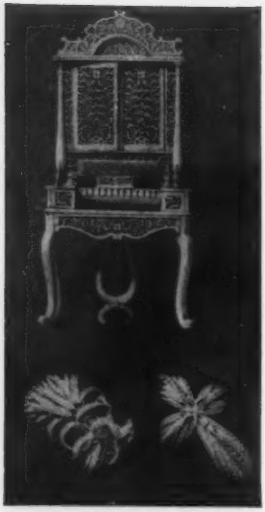

Exquisite ivory carvings made by skilled Swiss craftsmen. From the collection of the Carnegie Museum.

The Swiss Economy

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It was in the period from 1618 to 1848 A.D. that Switzerland fought, planned and realized the basis for its present day independence.

During the Thirty Years' War (1618 to 1648), Swiss mercenaries, numbering sixty to seventy thousand men, hired out as soldiers for warring European powers. From this service, great wealth poured into the Swiss confederation and stimulated the growth of industry.

This era also saw agriculture prosper with increasing exports of cattle, horses, wine and cheese. Trade with the Far East in fine fabrics and spices developed small businesses and a middle class.

After severe setbacks to its neutrality during the Napoleonic Wars, Switzerland achieved complete independence in 1848.

The Swiss developed modern banking practices at an early date because of the increased activity in their trade.

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PITTSBURGH BICENTENNIAL 1958-59

COVER

An unusual stone effigy in the form of a turtle (4¼ inches long) used in the burial ceremony of the Mound Builders, who lived nearly 2,000 years ago. Unearthed last summer in West Virginia, it is now in Carnegie Museum's collection.

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SUMMER CALENDAR

CONTEMPORARY COLLECTION

More than 80 paintings and sculptures by contemporary artists, acquired by the Institute the past few years, also new prints and drawings and several loaned paintings, continue in third-floor galleries through June 21.

TREASURED ANTIQUES

Some 600 locally owned antiques, dating before 1830, continue through June 7. The exhibit was organized by the Women's Committee of the Department of Fine Arts and sponsored by the Pittsburgh Bicentennial Association and the Commissioners of Allegheny County.

FROM THE PRINT COLLECTION

Engravings by Claude Mellan (1598-1688) are to be seen in Gallery J, June 15 through September 27.

TREASURE ROOM

Powder Horns and American History derived from the collection of Dr. James A. Cowan, Jr., July and August.

SUMMER ORGAN RECITALS

Marshall Bidwell presents a recital on the great organ of Music Hall each Sunday afternoon from 4:00 to 5:00 o'clock, sponsored by the Arbuckle-Jamison Foundation. These continue through June, resume October 4.

SIR ARTHUR CONAN DOYLE CENTENARY

First editions, manuscripts, and copies of the *Strand* magazine in which the Sherlock Holmes stories first appeared are exhibited in the Library hallway June 15 through the middle of August. These are lent by James Bliss Austin and Robert Schultz.

CHILDREN'S PROGRAMS

Drawing lessons, "Art in Nature," will be given Tuesday and Thursday mornings at 8:45 A.M., from June 30 through July 31, for ten- to twelve-year-olds.

Nature classes for six- to sixteen-year-olds, grouped by ages, will be held for six weeks beginning July 6. The groups will each meet twice a week.

Story hour for five- to twelve-year-olds continues each Saturday afternoon at 2:15 o'clock all summer.

During July and August there will also be story-telling by Library staff members Wednesdays at 2:30 P.M.

OUTDOOR DRAWING AND PAINTING

Joseph Fitzpatrick, Roy Hilton, and Raymond Simboli will each give a six-weeks' course for adults on landscape drawing and painting, beginning June 15, sponsored by the Division of Education. Registration fee, $12.00.

SPEARPOINT AND POTSHERD

The six Indian culture periods of the tri-state area are shown in artifacts, drawings, photographs, and reproductions arranged in time-culture sequence. Seven panels feature Monongahela Man, of the Late Prehistoric.

MUSEUM

First floor . . . . Deadline for Wildlife, conservation exhibit sponsored by the Pennsylvania Game Commission: farmscape mural, mountain waterfall, game fish specimens, family groups of small mammals. Marine Hall with big-game and coral-reef fishes. Dinosaur Hall's world-famous Jurassic collection, including *Diplodocus carnegii*, *Apatosaurus louisae*, and *Tyrannosaurus Rex*; also many ammonites. Fossil Mammal Hall with Cenozoic specimens and Panoroll. Insect and Invertebrate Hall: enlarged glass models, habitat groups, insect family tree, invertebrate specimens. Bird and Reptile Hall: bird habitat groups, Bird of Paradise specimens, the poisonous and nonpoisonous snakes of Pennsylvania. Folk Art of Indonesia. Costumes of the Turn of the Century.

Second floor . . . . Mammal Hall with habitat groups of North American and African mammals, such as Glacier Bear, Guanaco, Siberian Tiger, Snow Leopard, Giant Panda; models of all the big-game mammals of North America; specimens of more than forty Pennsylvania mammals. Plant Hall with habitat groups demonstrating ecology; models of plant fibers and local fungi; poison ivy. Bicentennial Dolls. Lighting Devices. Postal History of Pittsburgh.

Third floor . . . . American Indian Hall with Spearpoint and Potsherd; life-size figures of Sioux, Hopi, Zuni, Navajo, Yuma, and Chippewa Indians. Ancient Near East Hall with an Egyptian burial boat, predynastic burial, mummies of people, animals, and birds, together with jewelry, tools, and textiles. Ancient Mesopotamia. Model of Khirbat Qumran, where Dead Sea Scrolls were written. Transportation Hall with vehicle models.

DEPARTMENT OF FINE ARTS

First floor . . . . Sculpture Court of white Pentelic marble, built to resemble the Parthenon, with contemporary sculpture, decorative arts objects, casts of classical sculpture. Hall of Architecture, containing casts such as Ghiberti doors, Abbey Church of St. Gilles façade.

Second floor . . . . Permanent collection of paintings: "old masters" in gallery A, modern Europeans in B, and Americans in C. Hall of Decorative Arts and Treasure Room. Special exhibition galleries closed.

Third floor . . . . Gallery of Contemporary Art. Special exhibition galleries closed.

PITTSBURGH'S "HANGING GARDEN" IN THE MIDST OF TALL OFFICE BUILDINGS

MELLON SQUARE PARK

A park based on plants grown in containers

FRANK CURTO

MELLON Square Park is an excellent example of the use of plants grown in containers on a grand scale. At the same time, the park is a vivid demonstration of the ability of many plants to flourish under extremely adverse conditions.

The park is a completely elevated structure, 260 feet by 230 feet, or about 1⅜ acres. This landscaped roof shields one full block of stores on the north side and covers six underground floors of a parking garage capable of housing 1,000 cars. The roof is composed of 18 inches of construction materials applied in six layers: three layers of waterproofing; a layer of sand and gravel and cement fill; 4 inches of concrete with built-in snow-melting system; and a final layer of rustic Venetian terrazzo. The polished marble granules of the terrazzo, in four colors, are laid between stainless steel screeds. The paving design depicts the Pittsburgh triangle, but the triangles may be looked at also as large M's, commemorating the donors of the park, the Mellon family.

BUILT-IN CONTAINERS

The plant containers, constructed of reinforced concrete, form an integral part of the concrete roof slab. All the containers, including those cantilevered over openings and areaways, are faced and capped with polished Minnesota grey granite. Drainage lines and irrigation pipes as well as electrical conduits were installed in the planting boxes during their construction.

From the moment of the park's conception until its completion, the architects, landscape architects, and the technical staff of the City of Pittsburgh's Department of Parks worked together as a team. Once the over-all design was accepted, an immediate search was made to select, tag, and reserve the plant material for the park. For this purpose the landscape architect and the city's horticulturist visited various nurseries in Illinois, Ohio, Pennsylvania, New York, Virginia, New Jersey, and Maryland, and personally selected and tagged every plant that was to be used in the park.

MANY PLANTING PROBLEMS

Choosing the plant material for the park was not an easy matter, because the plants not only had to fit the architectural picture and be in keeping with the over-all design, but had to be selected also for their resistance to the worst possible environmental conditions. In addition, the donors had stipulated that the park should have a finished appearance from the very beginning, which meant that only exceptionally well-grown plants of fair size could be used.

Because of the park's location, the prevailing winds from the west are channeled down one of Pittsburgh's windiest streets. The wind, coming down a canyon of tall buildings, bursts into the open park area with a velocity that at times has been sufficient to break quarter-inch steel cables guying the big trees.

Every effort was made in the design to vent the fumes from the thousands of automobiles that use the garage each day. These fumes are added to the general atmosphere surrounding the park, which is already polluted by the heavy vehicular traffic passing on the four streets bounding the park. An additional complication is the heating of the roof slab during the winter months, inasmuch as the floors beneath are heated, and heat is generated also by the snow-melting lines built into the slab itself.

Another factor that had to be taken into consideration was light. Some of the planting boxes are situated so as to receive full sunlight throughout most of the day, whereas a certain portion of the same planting area is shaded most of the time. Since in many instances the same planting continues through both types of exposure, plants had to be chosen that tolerated both conditions equally well. The planting list appended shows the plant materials employed in the park. No changes in plant material have been made since the original planting. The first honey locust (*Gleditsia* sp.) was set in its container on the 7th of February, 1955, and all planting was completed on the 10th of June, 1955. The loss in plant material has been negligible, and the majority of the plants have done sur-

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As horticulturist for the City Department of Parks and Recreation since 1946, Mr. Curto has charge of Phipps Conservatory in Schenley Park, the Aviary-Conservatory on the North Side, and outdoor gardens scattered through the city. He is responsible for the floral exhibits in Mellon Square Park and recently has been involved with the Bicentennial planting of Point State Park. He frequently appears on television, is on two regular radio programs, and writes a weekly column for the *Pittsburgh Sun-Telegraph*. Mr. Curto holds a master's degree in horticulture from Ohio State University. He is a fellow of the American Institute of Park Executives and is active in the Pennsylvania Nurserymen's Association.

This article is reprinted from *Plants & Gardens* last spring, courtesy of Brooklyn Botanic Garden.

Pittsburgh Post-Gazette

MELLON SQUARE PARK, BUILT OVER A SIX-FLOOR UNDERGROUND PARKING GARAGE AND SEVERAL SHOPS

prisingly well. [Severe killing of English ivy experienced during the past winter by everyone in the Pittsburgh area has made replacement necessary.] Most of them have made growths comparable to that of the same kinds under normal conditions. One very small planting of English ivy adjacent to the garage entrance had to be removed after the first winter.

All the flowering plants such as hybrid rhododendron, azaleas, pieris, pyracantha, viburnum, aronia, *Magnolia virginiana*, and flowering crab apple have budded and flowered very well through three growing seasons.

The minimum depth of the shallowest planting area is 14 inches. These areas are planted with English ivy, one of several of Hahn's patented varieties. In a few areas, the same shallow depth is planted with trailing *Euonymus fortunei colorata*, which has done exceptionally well. All other planting areas range in depth from 24 inches to the 4 feet in which the large deciduous trees are planted. Except for the shallow areas, 6 inches of coarse gravel is provided for drainage. This has been fully adequate, since all the beds drain perfectly. The drainage material was covered with a 4-inch compacted layer of clean straw to prevent the soil—composted mushroom soil—from being washed into the gravel. All the ericaceous plants were pocket-planted in oversize holes filled with pure Canadian peat moss.

IRRIGATION

An elaborate and rather expensive irrigation system had been installed in the park during its construction. This system consisted of a series of bubblers and sprinkler heads and was expected to provide complete and automatic watering of the plants. Unfortunately, it proved unsatisfactory from the very beginning. The bubblers, which were supposed to flood the planting beds with water, failed to do so because the water, instead of spreading out on the surface, ran down along the pipe risers. The sprinkler heads, while effective in certain areas, can be used only late at night when no one is in the park, because the frequently violent wind drifts the water spray over the paved areas. Fortunately, a sufficient number of hose connections had been included in the irrigation layout, permitting hand watering with reasonably short sections of hose. Since several of the long planting boxes do not dry out uniformly, parts of them remaining quite moist while other areas dry quickly, hand watering is unavoidable anyhow.

All the planting areas in the park receive one application of dry complete fertilizer in early spring. This is followed by two applications of a complete liquid fertilizer, once during the late spring and again in midsummer.

PEST CONTROL

Though Mellon Square Park is well removed from any other large plantings, insect pests have given the usual trouble. Bagworms have attacked the liquidambar and honey locust trees. Spider mites and scales have infested the azaleas, and aphids have been found on tips of the English ivy. Our spray program starts with a late winter spraying with an oil spray against scale, and this is followed by regular spraying with DDT and malathion. At the beginning of the

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WILLIAM B. McFALL, *President*

bagworm season the trees are sprayed with arsenate of lead and malathion, combined with a spreader-sticker. This program has kept insects pretty well under control. Only the bagworms that infest the honey locust trees are still giving trouble. Despite weekly spray applications, it has never been possible to obtain uniform coverage with spray material of all the tiny leaflets and branch tips. When complete kill is not obtained through spraying, the live bagworms are hand picked wherever they are accessible.

SPECIAL DISPLAYS

Two large and two small planting boxes in the park are reserved for floral displays. These consist of the customary spring bulbs, followed by annuals and finally by chrysanthemums in mid-October. For the first two seasons a large variety of annual plants were tried in these areas in order to determine which would give the best results. We found that bedding begonias were most outstanding and the best variety tried so far is Pink Profusion. The second most effective plants have been the small-flowered bedding petunias.

One box is regularly planted with large tropical foliage material such as crotons, pandanus, acalyphas, beloperone, hibiscus, and coleus. This same box is used for the Christmas tree display. It is fitted with heavy steel channel irons made as an X frame, permanently placed on the bottom of the box. The ends of the frame are fitted with steel rings, to which guy lines are attached to support a 35- to 40-foot Christmas tree. The large areas containing ground-cover plants are thickly planted with narcissus bulbs.

WINTER PROTECTION

Winter protection consists of spraying all plants with Wilt-Pruf. This material is applied to all the plants in the park in early November, during a warm, bright, sunny day, using a power sprayer. We believe sincerely that the use of Wilt-Pruf has helped considerably to reduce the loss of plants from winter-kill.

LIGHTING

Most of the lighting for the park consists of splotlights with blue lenses that are recessed to ground level in the planted areas. Smaller lights are embedded low in the granite facing of the planter boxes to light the paved areas. An additional amount of light is supplied by the spotlights in the large pool and from lights concealed behind the waterfalls on the cascade pools. The only other light that enters the park is reflected light of street lamps across from the park. There are no light standards or poles within the park proper. The over-all effect of the lighting is a soft but rather spectacular moonlight glow.

Visitors from all over the world have exclaimed over the beauty and utility of this park, which is considered to be one of the most outstanding examples of redevelopment in an urban area. Surrounded on all four sides by skyscraper-size buildings, the park is a cool and inviting oasis to the tired shopper, the harried executive, and the multitude of workers who are employed in the downtown area.

PLANT LIST

TREES

13 *Fagus sylvatica* (European beech)
2 *Franklinia alatamaha*
9 *Gleditsia triacanthos* (honey locust)
7 *Magnolia virginiana*
1 *Malus baccata columnaris*
3 *Malus* "Zumi"
1 *Malus purpurea eleyi*
5 *Pinus sylvestris wateriana* (Scotch pine var.)
3 *Oxydendrum arboreum* (sourwood)
14 *Tilia cordata* (linden)
5 *Liquidambar styraciflua* (sweet gum)
1 *Sophora japonica* (Japanese pagoda tree)

[*Turn to page 192*]

FIRES UPON THE FORGE

A. FRED SOCHATOFF

SOME years ago, when I was working daily in the open-hearth shop of a steel mill in the Pittsburgh district, one operation constantly drew my attention and invariably kindled a tingling of excitement within me. Although the operation might take place as many as eight to ten times in the course of a daily work period—that is, fifty to sixty times within a week—I was always thrilled by the tapping of a huge furnace.

As the metal came rushing forth to flow into the cavernous ladle poised beneath, my eyes peered through the cloud of smoke to observe the brilliant red pool that took on other, equally rich, hues, as now the manganese, now the silicon, and now other ingredients were added. The entire operation took seven to fifteen minutes, but I was enthralled to the very end, when the dregs of the furnace issued in the form of a thick slag, topping the molten metal and sometimes overflowing the ladle to create a golden stream in the pit beneath.

Even persons who have not had the opportunity to view the making of steel at close range have spoken of a similar surge of excitement on seeing the sky light up with the reddish-yellow glow of a Bessemer converter. Travelers approaching Pittsburgh have come to associate that glow with the city, to regard it as a symbol of the industrial activity for which the city is famous throughout the world.

Those of us who live here make the same identification, although we are prone to be less vocal about it. Intuitively perhaps, we feel that the damping of the open-hearth furnaces, the absence of the Bessemer glow from the sky are ominous signs indicating that something is amiss, for to us the normal functioning of our city is inseparably associated with the fires upon the forges of the steel mills.

And lighting of fires upon the forge imparted the same feeling of normalcy and of security to the residents of ancient Greece and Rome. Prometheus, who brought fire down from heaven and made it available to men as well as the gods, was admired and lauded as a prominent benefactor.

Moreover, Vulcan or Hephaestus—he who taught man how to use fire and adapt it to a number of helpful applications—was venerated as one of the major deities, repeatedly described by the poet Homer as "of great renown." The offspring of Jupiter and Juno, king and queen of the gods, he had been puny and, according to one account, lame at his birth. He had grown, however, to be one of the most powerful of the residents of Olympus—in the words of Homer again, "of huge bulk." In spite of the fact that he was lame, he was visualized by the Greeks and the Romans—as indeed he has been depicted in numerous works of art of later times—as a mighty smith presiding over the fires upon the forge, and, quoting Homer again, "sweating in toil and busy about his bellows."

In that capacity he was responsible for the

This article was first written as an address before the Classical Association of Pittsburgh and Vicinity. Dr. Sochatoff, who was born and grew up in Pittsburgh and received his doctorate at the University, is associate professor of English at Carnegie Institute of Technology.

A bronze Vulcan working at his sculptured forge might be expected somewhere in a local park, symbolizing the strength and energy of the City of Pittsburgh, but he appears to be absent. "Joe Magarac" has not seemed to catch the popular fancy, so perhaps here is an opportunity for some sculptor to create a figure that would rival the friendly cartoon "Pa Pitt."

F. Ross Altwater

Thy continual workshops, foundries, risen or rising,
See, from their chimneys how the tall flame-fires stream.
—WALT WHITMAN, *Song of the Exposition*

manufacture of articles useful in both peace and war. The dwellings of the gods and goddesses on Mt. Olympus were the creation of Vulcan, as were the chariot in which Apollo carried the sun across the sky each day and the huge scepter wielded by Jupiter that came to be a symbol of his power and authority. The weapons and the armor his fellow gods donned on occasion, and the arrows discharged by Cupid to ensnare victims in the throes of ardent love were all forged on Vulcan's anvil.

Three women are mentioned in various myths as wives of Vulcan. Each of them is noteworthy, for each reflects the tendency of ancient man to express in the form of a myth a basic facet of his daily activities, or sometimes a deeply rooted belief associated with those activities.

Most frequently recounted as the wife of Vulcan was Venus, the goddess of beauty. In coupling of the two we detect the beauty seen by ancient man—still recognized today—in work wrought with skill upon the forge.

Another evidence of this belief of early man in the relationship between a skillfully wrought article and the splendor imparted to it is the account that Vulcan was wed to the youngest of the three Graces, Aglaia or Splendor.

A third tradition had Vulcan married to Maia, the nymph after whom the month of May has been named. This tradition probably identifies the life-giving and productive powers generated by warmth with their reappearance in May after the long winter months.

All three ladies—Venus, Aglaia, Maia—were celebrated in Greek and Roman mythology for their beauty and their charm. The association of Vulcan with them, if nothing else, is a tribute to his personality and character. But the attractiveness of those qualities in him is attested by other evidence also. We learn that he was kind and good-natured, peace-loving despite his participation in the making of articles of war, popular both among his fellow deities on Olympus and with residents on earth.

Sometimes, according to Homer, the appearance of Vulcan limping busily about his forge was the cause of "inextinguishable laughter" to the gods, but never was he looked upon as a fool. He was loved and honored not only as the patron of craftsmen and the founder of wise practices, but also as a god of healing.

In the commonly circulated myth that he assisted Jupiter in bringing forth Minerva, the goddess of wisdom, from the forehead of her father, we discern Classical man's representation of the part played by technology in the generation of learning and knowledge.

Pittsburgh, the city prominent the world over for the fires upon its forges, is in the process of commemorating the two-hundredth anniversary of its origin. Like Vulcan, it was puny at birth, but, again like him, it has grown to become a foremost influence in the making of articles indispensable in both peace and war. Such activities have sometimes exposed it to "inextinguishable laughter" as the Smoky City, but the worth of those activities has been recognized and esteemed. In recent years the association of the city with beauty and splendor has come to be exalted in the same way as its prominence in medicine and health, and as its contribution to the increase of man's learning and knowledge.

Indeed, the parallels between the career of Vulcan and the record of Pittsburgh are so striking that, in this year of the Bicentennial celebration of the city, we do well to renew our acquaintance with Vulcan, the patron of fires upon the forge.

MELLON SQUARE PARK

[*Continued from page 189*]

SHRUBS

112 *Aronia arbutifolia brilliantissima*
75 *Azalea* "Gable Hybrid Orange"
96 *Azalea* "Wilhelmina Vuyku"
48 *Rhododendron obtusum amoenum*
50 *Berberis julianae*
93 *Euonymus fortunei coloratus*
154 *Ilex crenata bullata*
165 *I. crenata* "Stokesi"
378 *I. crenata rotundifolia*
48 *Ligustrum ibolium*
15 *Pieris floribunda*
69 *Pieris japonica*
171 *Pyracantha coccinea lalandi*
20 *Rhododendron catawbiense* Hyb. Red.
30 *R. catawbiense* "Roseum Elegans"
2 *R. catawbiense* "Boursalt"
32 *Taxus media* "Hicksi"
14 *Viburnum tomentosum* "Mariesi"
5 *Buxus sempervirens*

VINES

12,026 *Hedera helix* "Hahn's Self Branching"
6,037 *Hedera helix* "Hahn's Maple Queen" (Pat.)
2,522 *Hedera helix* "Hahn's Green Ripple" (Pat.)
1,756 *Hedera helix* "Hahn's Shamrock" (Pat.)
2,262 *Pachysandra terminalis*

BUOYS AND GULLS TOGETHER

But—there's no such thing as a "seagull"

KENNETH C. PARKES

Most of us are authorities on, at most, one or two subjects. Yet we like to think we know at least a little about a good many things.

We realize, for instance, that we are not qualified to be full-time art critics, but we like to think we can recognize "schools" of painting, classified, perhaps, as "realistic," "surrealistic," and "abstract." Such an oversimplification, of course, would send our Fine Arts staff at Carnegie Institute into convulsive shudders.

Or, we feel we can identify a voice as having an English or a Brooklyn accent, although in point of fact the former speaker may be a South African and the latter from Jersey City.

In the same way our old friend, The Man in the Street, though not pretending to be a bird-watcher—he leaves that to his wife—still feels capable of identifying certain birds that "everybody knows." These would include the robin, the crow (so far, so good), the sparrow (18 species of sparrows have been found in western Pennsylvania), the pigeon (Remember the Wabash Building?), the redbird (which, in view of the world situation, prefers to be called the cardinal), and the seagull.

It is on this last feathered legend that we wish to ponder.

And legend it is—for there is no such critter as "the seagull."

This name is a misnomer for no less than three reasons. Let's dissect the name into three parts—*the*, *sea*, and *gull*—and start with the last.

Gulls, there most certainly are. Technically a gull is any member of the subfamily Larinae of the family Laridae. A gull is rather easy to identify as such, but there are approximately 42 species of gulls around the world, many representing the toughest problems of field identification encountered by even the most proficient bird-watchers.

Twelve of the 42 species, including most of the gulls that have been reported in western Pennsylvania, are on exhibition in Bird Hall and also in the Children's Museum, on the first floor of Carnegie Museum.

Thus we turn to the first component of our three-part name, "the." It is just as silly to talk about "the" gull as it would be to try to describe "the" dog.

Ah, you will say, but what about the rest of the name, the word "sea"? It was the *sea*gull that The Man in the Street claimed he could recognize. Alas, there is no such thing, and for two very good reasons.

Although many people use "gull" and "seagull" as synonyms (like "roach" and "cockroach"), there are a good number of species of the gull family that seldom, if ever, encounter the ocean. Perhaps you have seen great flocks of pearly-winged birds following the plow in some Midwestern farm state, and wondered what seagulls were doing so far from the sea? But the interior of the continent is the normal home of such birds.

A Western species known as the California Gull nests in large colonies on islands in Great Salt Lake, Utah. A monument in Salt

Lake City commemorates a flock of these gulls that saved the early Mormon settlers from starvation by devouring a plague of locusts that had descended upon their crops. Hardly the act of a sea bird, this.

But, undeniably, many gulls are found along the seashore. The ubiquitous Herring Gull, for instance, is part of your vacation landscape whether your favorite beach is in Maine or Miami.

However, there is a catch even here. Note the phrase, "along the seashore." Under ordinary circumstances, that's about as far out to sea as gulls will go. They are not true sea birds in the sense that they range the open ocean. Only one gull of the Atlantic, the kittiwake, customarily goes out much beyond the limits of the continental shelf. All the rest forage the shallow waters just offshore, the beaches themselves, and open fields farther inland along the coast.

Gulls may be lured beyond their usual hunting waters by man, who has a habit of jettisoning garbage from his ships and fishing boats. Voracious scavengers that they are, gulls are quick to learn the advantages of ship-following.

There are, to be sure, birds to be seen almost anywhere on an ocean voyage, no matter how far from land. Some of these look superficially like gulls, but belong to quite a different family. These are true sea birds, coming to land only during the nesting season. They are collectively known as the "tube-nosed swimmers" because of the odd structure of their nostrils, and include such indefatigable mariners as the shearwaters, albatrosses, and petrels.

Dr. Parkes is associate curator of birds at Carnegie Museum. He received his doctorate from Cornell University. His most recent research is on the cycles of molts and plumages of birds.

The spot drawing at the beginning of the article is by Clifford J. Morrow, Museum staff artist.

The last group, which includes the little birds known to sailors as Mother Carey's Chickens, were dubbed petrels, or Little Peters, when they were seen hovering just above the surface of the water and seemingly walking upon it, as a larger Peter is said to have done.

Although "the seagull" does not exist, as we have seen, nevertheless the gull family as a whole is one of the most interesting groups of birds and well worth studying. In recent years gulls have been among the favorite subjects of a group of scientists known as ethologists, specialists in a branch of the study of animal behavior.

Gulls are ideal subjects for such studies. They are large, conspicuous birds, nesting in dense colonies often relatively close to civilization; there are numerous species, all rather closely related to one another—hence the problems of field identification—so that comparisons of behavior patterns may be made from species to species; and gulls exhibit some elaborate and stylized display actions in their individual reactions to their mates, to their offspring, and to other members of the colony.

Most gulls lay their handsomely patterned eggs in mere scrapes on the ground, sometimes adorned with a few twigs or bits of shell. Those that nest in marshes, however, construct a more elaborate affair out of reeds and other readily available vegetation.

The two species of kittiwakes nest on narrow cliff ledges of northern seas, and have evolved many unique adaptations for this seemingly precarious life. Their claws, for instance, are sharper than those of ground-nesting gulls, helping the birds to hold onto their ledges even in a stiff wind. Young gulls of other species will run away if attacked; young kittiwakes, with no place to run, have lost this instinct and will merely crouch.

Another gull with nesting habits diverg-

BONAPARTE'S GULL (ADULT AND YOUNG)
Illustration by George Miksch Sutton from W. E. Clyde Todd's *Birds of Western Pennsylvania* (1940)

ing from those typical of the family is a small, black-headed species of northern Canada known as Bonaparte's Gull, named for a nephew of Napoleon I who was one of the great nineteenth-century ornithologists. This handsome bird builds its nests of sticks and twigs on the branches of trees in the great northern spruce forests, a most un-gull-like habitat.

Although we usually think of gulls as fish-eaters, they will spurn almost nothing of animal origin. As mentioned earlier, they are great scavengers, and often eat garbage of a vegetable nature as well as animal carrion. The Herring Gull has developed a somewhat unorthodox taste for blueberries, and often gorges on these fruits during the berry season in New England.

One feeding habit of some of our gulls is unbelievable enough to have been specifically denied in a recent book debunking hoaxes. Yet it is perfectly true that gulls will deliberately carry clams and other shellfish high into the air, then drop them onto a hard surface to break the shells and permit ready access to the meat inside. Originally the target was usually the hard-packed wet sand of the beaches, but gulls have learned that highways and airport runways are even harder. This may sometimes create quite a hazard to vehicles.

Closest relatives of the gulls are the smaller and more graceful terns, or sea swallows. Terns have narrower, more pointed wings, a more buoyant flight, and deeply forked, swallow-like tails. Having allotted one atrocious pun to the gulls in the title of this article, it seems only fair to give equal time to their small cousins, and recall the primitive hunter who stalked the beaches looking for birds for the tribal stewpot. Having only the crudest of weapons, he nevertheless managed to obtain plenty of meat by leaving no tern unstoned.

FURNISHINGS FROM "PIC-NIC," HOME (1830) OF MARY CROGHAN SCHENLEY, IN THE EXHIBITION OF TREASURED ANTIQUES

TITLE PAGES FROM BOTANICAL BOOKS

THE study of title pages can prove an exciting experience to those who profess a love for the history of art. For, just like sculpture, paintings, and buildings, title pages express the sentiment, aesthetic idea, and intellectual currents of their period. I have in mind, of course, mainly their embellishments, figural or ornamental, and not so much the type characters, which would be of more concern to the student of typography.

The Section of the Decorative Arts is indebted to Mrs. Roy Arthur Hunt for a loan from her large and renowned botanical library. About fifty books, each an important or significant item from the sixteenth to the nineteenth century, printed in many countries, will be on view until June 21, their title pages facing the visitor.

Starting chronologically, he will behold woodcut genre scenes of the sixteenth century still imbued with a medieval flavor and bringing to mind Gothic tapestries. These are followed by title pages from the Renaissance with their rich ornamental borders composed of motifs associated with contemporary architecture. Examples of the Baroque period lead into planted palace courts, formal gardens, or into a world filled with the fantasy of an opera performance of that age. Literary trends emanate from pages with mythological allusions and, by contrast, there is an engraved frontispiece, of a scientific and sociological character, with scholars visiting a private museum of natural history. Represented, too, are the Rococo and the Neo-Classic periods, showing, for instance, man in his relation to nature. The cycle ends with famous books of the nineteenth century and the Romantic age.

We have cast but a cursory glance here on the wealth of material exhibited. Intimate associations with the decorative arts will be found as numerous as they are obvious.

TITLE PAGE OF THE RARE FIRST EDITION OF *THE GRETE HERBALL*. LONDON, P. TREVERIS, 1526.
Collection of Mrs. Roy Arthur Hunt.

Only one twentieth-century book has been chosen for exhibition, namely Vol. I (1958) of the *Catalogue of Botanical Books in the Collection of Rachel McMasters Miller Hunt* compiled by Jane Quimby. In exhibiting this tome of erudition, bibliographical discipline, and fascinating historical reading, we are prompted not only to present a fine achievement, but also to pay tribute to a scholarly collector of whom Elizabeth Mongan, of the National Gallery, once wrote that to her task Rachel Hunt brings knowledge as well as love.

—HERBERT WEISSBERGER

AN UNUSUAL INDIAN EFFIGY

DON W. DRAGOO

PICTURED on the cover of CARNEGIE MAGAZINE this month is an unusual stone effigy tablet made by the Adena peoples who lived in the Upper Ohio Valley nearly two thousand years ago. This tablet, carved in the form of a turtle, was a significant item in the complex ceremonial life of these important people, who constructed large earth mounds to cover their dead. It was this trait that earned them the early designation as the Mound Builders.

During the summer of 1958, Carnegie Museum with the co-operation of the Hanna Coal Company and the West Virginia Archeological Society excavated the Cresap Mound near Moundsville, West Virginia. Near the top of this ancient Adena burial mound had been a fire that was the center for an important burial ceremony. At the conclusion of this rite for the dead, several stone tablets, including the turtle effigy, were consigned to the ceremonial fire.

Finely made tablets of stone, usually rectangular in shape, were used for preparation of the paint pigments that decorated the bodies of the dead and of the participants in the rite. Often, on one or more surfaces of these tablets, there are grooves worn by sharpening of the bone awls used for bloodletting. Blood from the performers of the burial rite was mixed with the paint pigments, commonly red or yellow ocher, to form a paste that could easily be smeared on the body to form designs. The care with which these tablets were made, their placement with or near the dead, and the fact that such items were often used after they had been broken indicate that they were sacred to the Adena Indians.

Most of the Adena tablets that have been found were carefully made but plain, a few have had incised zoomorphic designs on one surface, but the turtle effigy tablet from the Cresap Mound is the only one carved in the form of an animal.

Upon a block of fine-grained sandstone 11.9 cm. long, 8.8 cm. wide, and 1.9 cm. thick, all the major details of the turtle were depicted by the primitive artisan. The head, body, and legs were carved in the round. The eyes, mouth, and top outline of the carapace were shown by lines cut into the stone. The ventral surface of the tablet was smoothed to a flat surface. Several wide grooves were worn into this surface by abrasion of the bone awls used in the bloodletting ceremony. Red ocher pigments prepared on this aboriginal stone palette still stain its surface.

To the people who made this effigy tablet, the turtle was probably a sacred animal or totem. Their veneration of this animal has left us with a priceless example of primitive art.

At a date to be announced later, the turtle effigy will take its place in a special exhibition of artifacts excavated from the Cresap Mound. This will be located on the third floor of the Museum, adjacent to the Spearpoint and Potsherd presentation of early local Indian cultures.

Dr. Dragoo is associate curator of the Section of Man at Carnegie Museum. He is examining, studying, and classifying ancient Indian artifacts unearthed last summer in West Virginia and added to the Museum's collection. This summer he will be visiting a number of museums in the East to study their Indian burial-mound material.

ART IN GREENSBURG

The opening of the Westmoreland County Art Museum

JAMES D. VAN TRUMP

THE opening on May 29 of the Westmoreland County Art Museum at Greensburg was an event of signal importance in the cultural life of western Pennsylvania, inasmuch as the area has never been prolific in either the foundation or the maintenance of such institutions. When it is remembered that Pittsburgh has always been the art center of Pennsylvania's tramontane counties, it is the more gratifying to record the establishment of a secondary focus of artistic activity in the pleasant county town some thirty miles from the metropolis. The museum building, erected in 1956-59 under the auspices of the Woods-Marchand Foundation, most appropriately inaugurates its new role in the community with a large exhibition of two hundred and fifty years of art in Pennsylvania.

There is justice in this choice, since Greensburg is indisputably Pennsylvanian. A small manufacturing city of some seventeen thousand souls, it is situated in the western foothills of the Alleghenies, those great brooding ridges that stride obliquely across the center of the state. Both its tone and its appearance have something of the openness and folkish candor of the Middle West, as well as the guarded, traditional sedateness of the Atlantic seaboard. This is, and always has been, transitional country. Bisected by the steel rails of the Pennsylvania Railroad and ribboned with modern highways, the little city bustles quietly amid the rugged suavity of its hills. It partakes of both the East and the West, but it has a county-seat charm all its own, which possibly only a western Pennsylvanian could fully savor but which any American would recognize.

If such a town has an art museum at all, it is usually due to the preference and the munificence of some wealthy citizen. Greensburg possesses a corps of old families, many of them with legal or landowning backgrounds, a squirearchy that, however infiltrated by industrial or Middle Western ideals, still reflects the older social traditions of the East. With a such a background, it was only a question of time before the cultural ferment produced the museum idea and the individual to give it substance.

In the case of Greensburg, it was Mrs. Cyrus E. Woods, née Mary Todd Marchand (d. 1953), who was the moving force behind the present structure. Her family, the Marchands, had been socially and culturally distinguished in Westmoreland County since the late eighteenth century; both Mrs. Marchand and her husband, who was a prominent lawyer and political figure, possessed varied cultural interests, and they traveled extensively abroad. Cyrus Woods died in 1938, and in 1949, four years before her death, Mrs. Woods created the Woods-Marchand Foundation, whose express purpose was the erection and maintenance of the new museum. To it she left her home, her entire family fortune, and her own collection of Americana and decorative arts.

After her death, the trustees of the Foundation purchased property adjacent to the original Woods bequest, so that there was finally available almost an entire city block on which could be placed the museum, a garden, and a parking space—that inevitable adjunct of any contemporary public building. Sorber and Hoone, a firm of Greensburg architects, were engaged in 1953 to make plans for the new structure, but later the directors of the Foundation thought it advisable to consult Philip Johnson of New York, who submitted a design in the Modern style. It was finally decided to use the plans of the local firm, together with some of the interior elements of the Johnson project. The cornerstone was laid in September, 1957.

It was stipulated in the founder's will that the style of the building be traditional, and, however much the modernist may object to this architectural mortmain, the stone and brick Georgian envelope of the building appropriately embellishes, gently endorses, the tone of the Greensburg hills. America's first museum building, Pilgrim Hall at Plymouth, Massachusetts, has a columnar portico, and it seems, somehow, historically just that Greensburg's classical porch should continue the tradition so gracefully. It is a pleasant echo of an elder architectural day, and the discreet stone of these pillars both complements and corrects the wedding-cake dome of the Courthouse looming on the other side of the railroad cut.

Inside the building there seems to be a certain collision between the Georgian and the Modern elements, but not to any disquieting degree; there are inequities and inadequacies of plan, but the general effect is bright, fresh, and efficient. The expanding activities of the Museum should be well accommodated in the wide rooms.

The donor's gift contained nothing of importance in the major fields of painting and sculpture; there is a purchase fund, however, that, judiciously administered, should provide an adequate representation of American art—the domain favored for development, very justly on all counts, by the Museum directorship. The recent acquisition of a handsome Rembrandt Peale "porthole" portrait of Washington is an obvious cornerstone for such a group. It is to be hoped also that the

Mr. Van Trump, who is rapidly establishing himself as the architectural historian for at least southwestern Pennsylvania, here writes about the new art center that opened last month in Greensburg, some thirty miles southeast of Pittsburgh, in Westmoreland County.

WESTMORELAND COUNTY ART MUSEUM
221 North Main Street
Greensburg, Pennsylvania

Hours:
Sunday 2:00–5:00 P.M., closed Monday,
Tuesday 1:00–9:00 P.M., Wednesday through
Saturday 10:00 A.M.–5:00 P.M.

growing gallery will attract the donation of works of art from interested members of the Greensburg community. The augmentation of the existing collection should be both a challenge and an adventure for the young and able director, Paul Chew.

In the field of the decorative arts the new Museum should be able to play an extensive role as a focus for collecting activity in the area, and it has the opportunity of establishing criteria and providing a guiding hand in this respect. Appropriate and needed additions will certainly be made to the Woods-Marchand nucleus of decorative objects, but that nucleus has already provided material for a series of Victorian period rooms that, like similar installations at the Brooklyn Museum and the Museum of the City of New York, are intended to be a permanent exhibit. The appearance and tone of the living quarters of a distinguished western Pennsylvania family of the late nineteenth century have been adroitly and sympathetically recreated. It is as if the Woods-Marchand rooms had, like privileged ghosts, simply moved into the new building.

The conservation and exhibition of stored articles is not enough, however, to make the museum a vital force in any community. It is planned to make the institution an active educational center in the Greensburg area, and this will probably be its greatest contribution to cultural life in western Pennsylvania. There will be an annual program of some ten exhibitions that will give the local population an opportunity to examine original works of art in various media. It is intended to inaugurate, also, courses in art instruction on primary and advanced levels, for both children and adults. Film showings and illustrated lectures will extend still further the educational scope of the museum.

The special exhibitions will be part of the Museum program, and this inaugural show of Pennsylvania art is of great importance, not only in setting an exhibition pattern, but also in forecasting the direction in which a future permanent collection may develop. Since this article goes to press before the opening and since, also, there is not sufficient space, we can do no more than notice this attractive gathering of art objects. This showing displays fully the various heritage of two centuries of the Commonwealth's artistic history —there are some hundred and forty paintings, a dozen pieces of sculpture, and a large selection of the decorative arts. It is extensive, representative, and well chosen, and it seems largely to have escaped the tedious minutiae as well as the over-exhibited landmarks so often the burden of these local artistic anthologies. The theme is familiar, and we as Pennsylvanians would not have it otherwise, but in this instance the director, Dr. Chew, is to be complimented on his fresh and vivacious handling of the text, and the number and variety of his footnotes. The exhibition will continue through July.

The new museum at Greensburg will surely add a certain luster, a further cultural dimension to the city and Westmoreland County, and it may set a pattern to be followed by other western Pennsylvania communities. With its opening exhibition it has been handsomely launched, and on its setting forth, we, of the earlier established institution in Pittsburgh, wish it well.

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PITTSBURGH AND THE BEGINNINGS OF THE PETROLEUM INDUSTRY

PAUL H. GIDDENS

Long before Colonel Edwin L. Drake drilled his famous well in Titusville in 1859, people living in northwestern Pennsylvania were familiar with petroleum and used it. As white settlers moved into the region and located along Oil Creek, which ran between what is now Titusville and Oil City, they began collecting petroleum from little springs either in the bank or in the actual bed of the stream; or, making an excavation in the low marshy ground, which immediately filled with water and oil, they skimmed off the oil. Whenever they found a spring in the bed of Oil Creek, they constructed a dam of loose stones a little higher than the surface of the water, ten to fifteen feet in diameter, around the place where the oil bubbled up. An eddy was thus created inside the wall that confined the floating oil, while the water flowed out freely between the loose stones. The oil was allowed to accumulate for several days, until it became an inch or more deep, when a piece of flannel or woolen cloth or a blanket was spread over the surface to absorb the oil; then it was wrung out by hand into a barrel or some other container. In this way a gallon and sometimes several gallons could be collected in a day. The output of most of the springs, however, was insufficient to warrant collecting it as a business.

The inhabitants valued and used it exclusively as medicine. They found it beneficial and an infallible cure for headaches, toothache, sore breasts, rheumatism, lung diseases, constipation, cuts, burns, bruises, and all human ailments. Almost every family in the region kept a small supply of Seneca oil, as it was called, for emergencies; for ordinary purposes a pint bottle would last a year.

Possessing more enterprise and initiative than his neighbors, Nathaniel Carey, one of the first settlers on Oil Creek, often collected or purchased oil and peddled it about the country. Carey is said to have introduced petroleum into Pittsburgh, seventy or eighty miles distant, about 1790. His shipment consisted of two five-gallon kegs that were slung on each side of a horse. In exchange for oil, he secured the necessary provisions for his family. Later, raftsmen would bring a barrel or two down the Allegheny on a raft of lumber or logs; but the introduction of so much oil at one time literally flooded the market. A traveler in 1807 found that petroleum was selling at $1.50 and $2.00 a gallon in the Pittsburgh market.

By 1828 enough was known about petroleum to cause someone to advocate in a Pittsburgh newspaper that the city light the streets with it; the writer pointed out that the price was low; it could be collected with

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Dr. Giddens is the author of *Standard Oil of Indiana* (1956) and other books and since 1953 has been president of Hamline University in St. Paul. From 1938 to 1953 he was head of the department of history and political science at Allegheny College, and for ten years from 1943 he was curator of the Drake Well Memorial Park, at Titusville.

This article is brought to Carnegie Magazine readers in anticipation of August 27, when the centenary of Colonel Edwin L. Drake's completion of the world's first successfully drilled oil well will be celebrated at Titusville, Pennsylvania. It is reprinted from the *Western Pennsylvania Historical Magazine*, September, 1941.

scarcely any labor; and it was running to waste on Oil Creek. Nothing came of the suggestion, however, and Pittsburgh continued to regard petroleum as an ointment.

Petroleum was first placed on the market as an illuminating material through the efforts of Samuel Kier of Pittsburgh. For years the salt wells of his father near Tarentum, on the Allegheny River about twenty miles above Pittsburgh, had yielded a small amount of petroleum. About 1846, however, his father drilled a salt well in which oil appeared in a greater quantity. Lewis Peterson, Jr., who managed his father's wells near the Kier wells, experienced the same trouble. In fact, more oil came from Peterson's wells than from Kier's. It was an unwelcome substance, a source of great annoyance, and it is said that Peterson offered a reward to anyone who could utilize it. Without any knowledge as to how it might be used, they allowed it to run off either into the old Pennsylvania Canal or onto the ground.

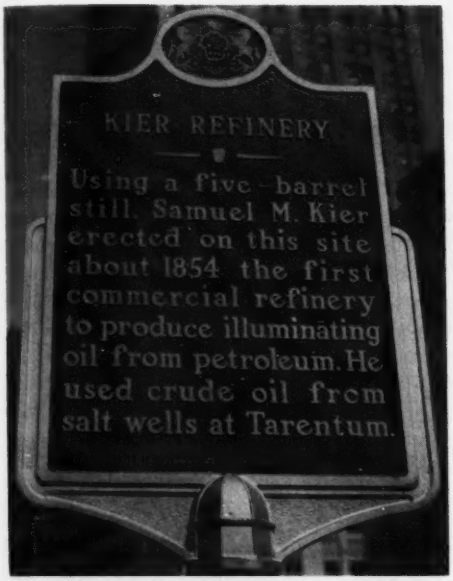
One day Peterson took a sample of the oil to the Hope Cotton Factory in Pittsburgh, and, by experimentation, the proprietor found it to be a better and cheaper lubricant for the finest cotton spindles than the best sperm oil. As a result, Peterson agreed to furnish two barrels a week, and for the next few years, the factory used the oil, unknown to anyone save the proprietor.

About 1849 Samuel Kier conceived the idea of bottling and selling the oil from his father's wells as medicine. According to the story, his wife had been ill with consumption and her physician prescribed "American Oil," which seemed to help her. Kier compared it with the oil obtained from his father's salt wells, and, inasmuch as they possessed the same odor, he concluded that they were identical. This experience and a knowledge of its long usage in western Pennsylvania led Kier to open an establishment in Pittsburgh where the oil was put up in half-pint bottles and wrapped in a descriptive circular telling of the wonderful curative properties of "Kier's Petroleum, or Rock Oil." Through agents, who traveled over the country, it was offered to the public. Despite the low price, Kier could not dispose of the two or three barrels produced by the wells; so he withdrew the salesmen and sold the oil through druggists. With a decline in sales and a supply of oil that exceeded the demand, Kier concluded that something leading toward a more general utilization of the oil must be done.

Having burned the crude oil at the Tarentum wells, Kier believed he might use the surplus if only some method could be found to eliminate the smoke and odor. He sent a man to England to learn the method of refining coal oil, but his agent returned empty-handed, for the British had covered up their

BURNER FOR OIL LAMP PERFECTED BY KIER

Four-pronged burner to fit kerosene lamps (1¾ inches across) perfected by Samuel M. Kier, of Pittsburgh, in his efforts to create a market for petroleum more than a century ago. Acquired by the George L. and Lilian I. Ball Collection of Lighting Devices of Carnegie Museum.


KIER REFINERY
Using a five barrel still, Samuel M. Kier erected on this site about 1854 the first commercial refinery to produce illuminating oil from petroleum. He used crude oil from salt wells at Tarentum.

NEW HISTORICAL MARKER

One of several new historical markers installed in downtown Pittsburgh this Bicentennial year by the Pennsylvania Historical and Museum Commission. This one may be seen on Seventh Avenue above Grant Street.

operations so well that no idea of the process could be obtained. Samples of the oil were then submitted to J. C. Booth, a prominent chemist in Philadelphia, who, after an analysis, recommended that Kier offer the oil to a New York gutta-percha firm, which was seeking a proper solvent for this gum. Kier followed the advice, but the experiments proved unsatisfactory. Upon further reflection, Booth became convinced that by distilling the oil he could obtain an excellent illuminant. He furnished drawings, and Kier immediately erected a refinery containing a one-barrel still on Seventh Avenue above Grant Street in Pittsburgh. After much experimentation Kier devised a crude distillation process, and about 1850 he began to distill petroleum, becoming America's pioneer oil refiner and industrialist. He named the new product "carbon oil," and sold it for $1.50 a gallon.

Without a suitable lamp in which to burn carbon oil, Kier is reported to have offered $1,000 for a new one that would successfully burn his illuminant; but none appeared. He therefore made some slight changes in the existing camphine lamps, so that they would burn his product without smoking and give off a strong and brilliant light. Since it was better and cheaper than existing illuminants, carbon oil soon came into general use in many places in western Pennsylvania, and Kier had to install a five-barrel still to supply the demand.

Afraid of explosion and fire, residents in the vicinity of the refinery complained to the authorities, and the city council gave Kier notice to move his refinery outside the city. Moving to Lawrenceville, a suburb of Pittsburgh, Kier continued his improvements in the quality of the oil and in the adaptability of the lamps. Subsequently he perfected but did not patent a four-pronged burner to fit any lamp, and it produced a steady flame with his oil; but the disagreeable odor still remained.

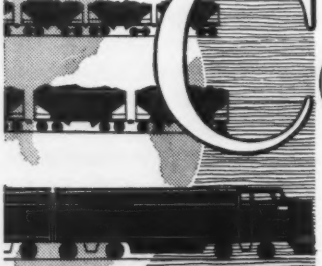
One day in 1857, A. C. Ferris, a New York business man, while visiting the drug store of Nevin, MacKeown & Company in Pittsburgh, saw in the basement a tin lamp burning carbon oil, which the firm of MacKeown & Finley had been distilling on a small scale from the Tarentum wells. Impressed by its possibilities, Ferris arranged to have MacKeown & Finley supply him with about 2,000 barrels of oil a year. His attention having been called to the fact that Kier distilled petroleum, Ferris also purchased and received a shipment from him in March, 1858. Upon testing it, Ferris wrote that "it is not as good and saleable a color as MacKeown and Finley's, being a deep blue." Furthermore, it had a very obnoxious odor. "In almost

every instance where we have sold it," Ferris wrote Kier, "we have had complaint of it, and a good deal of it returned upon our hands with expenses." In order to improve the smell, Ferris advised Kier to run his hot oil into a cistern, allow it to cool, and expose it to the air. Ferris bought one hundred additional barrels from Kier during the spring, but the oil continued to be so unsatisfactory that no further purchases were made.

Ferris proceeded, with considerable effort and much expense, to experiment; he devised a lamp that would satisfactorily burn carbon oil; he refined the oil and improved its quality; he developed the market in New York; and soon this improved quality of illuminating oil from petroleum outran the sources of supply. The price jumped from 75c a gallon to $1.50 and then to $2.00, a price so high that it furnished an incentive to find petroleum, if possible, in greater quantities.

Charles Lockhart of Pittsburgh and a friend in Tarentum formed a partnership in 1853, bought a salt well across the river from Tarentum that was producing petroleum, and sold the oil to Kier. Lewis Peterson, Jr., likewise concluded that he would improve the opportunity for getting oil. He and a friend decided to buy a salt well on the Humes farm not far from the Petersons' property. The entire product from this well was sent to Baltimore for use at the carding mills. The income of Peterson and his friend from this well for 1858 was said to be about $10,000. All efforts to increase the supply of petroleum, however, met with indifferent success until Colonel Drake drilled his famous well at Titusville in August, 1859.

The significance of Drake's discovery was that he had demonstrated in a practical way how petroleum could be secured in greater abundance, and his well served as a textbook



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for future drillers; he had tapped vast subterranean deposits of petroleum in the great basin of Oil Creek; and he was responsible for the establishment of a new industry that provided the world with a cheap, safe, and efficient illuminant. Not only that, but on the eve of a mighty industrial expansion, Drake had opened up a source of unexcelled lubricating oil, an item of utmost importance to the Machine Age. Neither Drake nor anyone else at the time seemed to understand the importance of this historic event. Even newspaper editors failed to grasp the significance of what Drake had done. The *New York Tribune* did not mention the affair until September 13, 1859, and then it simply printed a short communication from a Titusville correspondent. The old *Crawford Journal* at Meadville, Pennsylvania, was the first newspaper in the oil region to report the strike. Buried away among local items on the inside page, without a caption, the paper carried, on the same day as the *New York Tribune*, a few lines about the event destined to be of supreme importance to the world. It was not until September 30 that any Pittsburgh newspaper mentioned the strike, and then the *Pittsburgh Gazette* printed a long letter from Titusville describing the well; about a month later the *Pittsburgh Post* devoted a few lines to the excitement created by Drake's well.

Within twenty-four hours after Drake struck oil, hundreds of people were milling around the well. An eyewitness wrote that the excitement in the succeeding days was fully equal to what he had seen in California at the time of the gold rush; everyone was wild to lease or buy land at any price and drill a well.

In the midst of all the excitement Drake made strenuous efforts to market his rich supply of oil. He immediately got in touch with S. M. Kier and W. MacKeown and started shipping them oil in September, 1859. A month later, Drake contracted with Kier to supply him with such quantities as he desired at sixty cents a gallon delivered in Pittsburgh. Kier promised to sell the oil in preference to any other that should come onto the market, but in case any other appeared in such quantities as to depreciate the value of Drake's, the price paid by Kier was to be reduced. Under this arrangement, Drake shipped Kier almost $3,500 worth of oil from September, 1859, to January 1, 1860, and for the same period he shipped over $5,000 worth to MacKeown, with whom he had made similar arrangements.

In order to introduce his product and solicit other orders, Drake made a trip in February, 1860, to Erie, Chicago, Cincinnati, and Pittsburgh; but he found petroleum difficult to sell. While in Pittsburgh at the Scott House, Drake happened to meet George M. Mowbray, a chemist associated with Schieffelin Brothers & Company of New York. The meeting was fortunate, for Drake wanted to get his product on the market and Mowbray knew the value of petroleum. Once these two men had been introduced, they started a parley that did not break up until four o'clock in the morning. As a result of the two men's consuming almost an entire box of choice Havanas during their conversation, they made an agreement for the marketing of oil. In connection with this effort to create a market for oil, it is important to point out that Charles Lockhart of Pittsburgh, carrying samples of crude and refined oil, went abroad in May, 1860, and was the first to call the attention of Europeans to the value of petroleum.

In the meantime, salt manufacturers from Tarentum and capitalists from Pittsburgh had arrived in the oil region, and, like hundreds of others, were eager to invest in land and drill wells. One of the most important transactions in 1859 was the purchase of the

Story farm, a few miles above Oil City, by a group of Pittsburghers; the farm, consisting of nearly five hundred acres, sold for $40,000. The owners, in turn, leased lots to different persons and soon had some producing wells. Discouraged by the low price of oil, they decided to change into a joint stock company and organized the Columbia Oil Company in May, 1861, with a capital of $200,000, divided into 10,000 shares. Andrew Carnegie was one of the heaviest stockholders, and the subsequent dividends from oil helped him to erect his new steel mills. Persuaded by his good friend, William Coleman, Carnegie accompanied him on a trip to the farm about 1862, and had a "most interesting excursion." The influx of people was so great that it was impossible for them to obtain ordinary shelter; they put up in a shanty and lived comfortably. Of those who came into the oil region, Carnegie said:

> They were men above the average, men who had saved considerable sums and were able to venture something in the search of fortune. What surprised me was the good humor which prevailed everywhere. It was a vast picnic, full of amusing incidents. Everybody was in high glee; fortunes were supposedly within reach; everything was booming. On the tops of the derricks floated flags on which strange mottoes were displayed. I remember looking down toward the river and seeing two men working their treadles boring for oil upon the banks of the stream, and inscribed upon their flag was "Hell or China." They were going down, no matter how far.
>
> The adaptability of the American was never better displayed than in this region. Order was soon evolved out of chaos. When we visited the place not long after, we were serenaded by a brass band the players of which were made up of the new inhabitants along the creek. It would be safe to wager that a thousand Americans in a new land would organize themselves, establish schools, churches, newspapers, and brass bands—in short, provide themselves with all the appliances of civilization—and go ahead developing their country before an equal number of British would have discovered who among them was the highest in hereditary rank and had the best claims to leadership owing to his grandfather. There is but one rule among Americans—the tools to those who can use them.

The development of the petroleum industry not only provided Pittsburgh capitalists with a new outlet, but, since Pittsburgh possessed marked advantages over other cities, it became the earliest important distributing and refining center. It had an abundance of labor, chemicals, cheap coal, large banking and credit facilities, and cheap transportation from the oil field by way of Oil Creek and the Allegheny River. Oil could be floated down stream for much less than the cost of freight by rail. It also had a favorable position with respect to the three great markets; refined oil could be shipped over the Pennsylvania Railroad to Philadelphia for the eastern trade; it could be shipped down the Ohio for the western trade; and it could be shipped south by water and rail. For a few years, therefore, Pittsburgh reigned supreme as the center of the oil trade. This was a most fortunate development for the city, for at the outbreak of the Civil War, the gloom of uncertainty disrupted and paralyzed all branches of trade and industry in Pittsburgh; mechanics and laborers were thrown out of work; the iron and glass trade, which gave employment to thousands, languished; and the cotton factories, of vital importance to the city, stopped work. Business stagnation prevailed. And then along came the oil trade, which created new occupational groups, stimulated various branches of industry, and gave employment to all kinds of laborers.

This story of the rise of the petroleum business in Pittsburgh ends with the wild and unprecedented era of speculation in oil lands and oil stocks that began in 1864 and affected the entire nation. . . . Even before it reached its peak late in 1865, many unseen forces, domestic and foreign, conspired to produce a severe depression throughout the oil region . . . . The region ultimately recovered, but Pittsburgh lost its supremacy as a refining center in 1866 to neighboring Cleveland.

Heinz Sales Van, Ipoh, Malaya

PITTSBURGH'S *International flavor*

No matter how far a Pittsburgher roams, he's certain to find signs of his home town. Names and trademarks of Pittsburgh industry can be found in the most remote parts of the earth.

Not long ago a businessman from our city, hurrying down a street in Ipoh, Malaya, stopped short when he saw a sales van parked outside a store. He couldn't read the Chinese characters on the side of the truck, but he certainly recognized the ketchup bottle and the 57 on the can of beans!

A Pittsburgh woman on a round-the-world cruise tells of her astonishment at seeing a baked bean sampling on a sidewalk of Singapore (the keystone label was so like home), and a school teacher still chuckles at the line of youngsters she saw coming out of a food store in South Africa . . . each wearing a big grin and a tiny green pickle pin!

For more than a half century, these Heinz trademarks have been signs of good eating around the globe. Henry Heinz, founder of the Pittsburgh food plant, opened his first overseas agency in 1892 in London; and as early as 1900, over 350 "travelers", making their rounds in everything from canoes to jinrickshas, were sampling and selling Heinz varieties from Alaska to the Cape of Good Hope.

Today the famous 57 are produced in ten factories across America, in Canada, England, Australia and Holland and shipped to more than 200 countries around the world. Pittsburgh's favorite flavors are truly *international* flavors.

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ART AND NATURE BOOKSHELF

WASSILY KANDINSKY: LIFE AND WORK
By Will Grohmann
Milton S. Fox, Editor
Translated from the German by Norbert Guterman
Harry N. Abrams, Inc., New York, 1959
428 pages ($17.50)
920 illustrations including 41 color plates
Carnegie Tech Fine Arts Library no. Q759.7 Kl6g.

The heart must lie in the region of the head. —Balzac

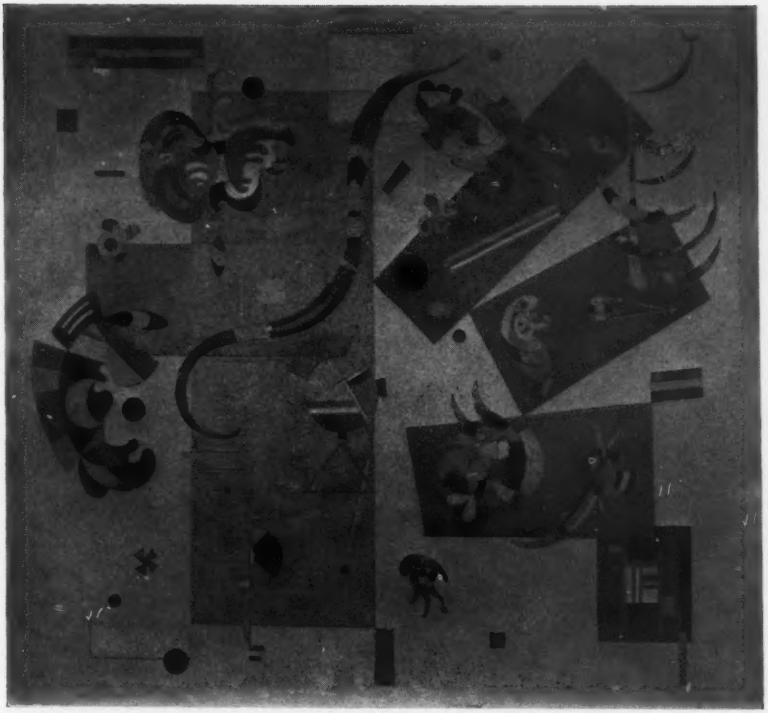
The straight line has both tension and direction. As a horizontal it is cold and flat; as vertical it is warm; as diagonal it is lukewarm. . . . The straight line is lyrical; whereas, wherever two forces operate, drama arises. When the forces work alternately, angular lines are produced (acute, obtuse, and right angles); when they work together, curved lines result. The right angle tends to red, the 60-degree angle to yellow, the obtuse to blue."

Thus Will Grohmann gives us a sampling of Wassily Kandinsky's observations relating to the theory of composition in a beautiful big book dedicated to a review of the life, art, and writings of one of the foremost figures in twentieth-century art. Professor Grohmann is a leading German scholar dedicated to the task of providing readable accounts of central European art history of the twentieth century. Besides other works, he has previously treated the life and art of Paul Klee with similar thoroughness, and he now offers us (through the publishing house of Harry N. Abrams of New York) this equally superb volume on the painter Kandinsky.

Will Grohmann knew both Klee and Kandinsky personally, a circumstance which adds sympathetic warmth to this conscientious record. Only the fact that it was printed in Germany can account for the bulk and richness of such a volume. Containing no less than 41 large color plates and a total of 920 illustrations, it undertakes to reproduce every known Kandinsky oil as well as to offer a vast number of drawings, prints, and sketches. The latter often decorate the text as marginal decorations, tail pieces, or other "breaks," and so add much pleasure to one's reading. Indeed, with its stamped yellow linen cover, its handsome type, its exhaustive catalogue of works, its selective bibliography, and its index of names, it achieves near perfection in book production. Only the overly numerous typographical errors slightly mar an otherwise remarkable achievement.

Treating an era as well as a genius, Will Grohmann provides much beside the strict record of Kandinsky's works, although this is the chief matter of the book. Those who do not want to follow the author's often detailed analysis of Kandinsky's works may lightly skip when so impelled. Curiously enough, one obtains scarcely any idea of the painter's personality outside of its expression in his art. In these pages the man himself is ghostlike. Neither is much attempt made to offer appreciation or criticism. Instead, the author's contributions lie in the realm of clear and orderly exposition, a chronological recording of artistic achievement, all described with Germanic patience and precision.

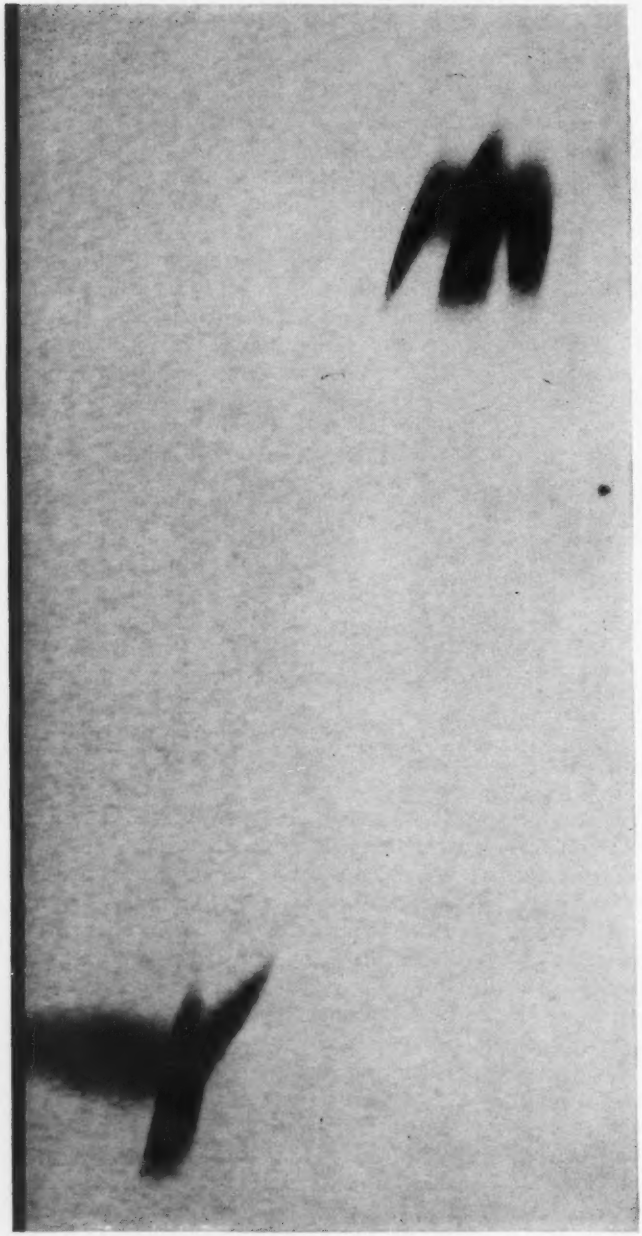
Naturally enough, something of the story of the Blue Rider movement is related, as well as of the Bauhaus school, in which activities Kandinsky played major roles. Will Grohmann traces the growth of the idea of total abstraction as Kandinsky developed it, suggesting that the experience of seeing a



BLUE WORLD, No. 602 (1934) BY WASSILY KANDINSKY
Oil with sand, 43½ x 47⅝ inches
The Solomon R. Guggenheim Museum, New York City

Claude Monet *Haystack* in an exhibition of French Impressionists in Russia about 1890 may have planted the first seed of nonfigurative thought in his mind. Kandinsky had failed to recognize the object, the haystack. Later, remembering this fact himself, he had thought that "unconsciously, the object as an indispensable element of the picture became discredited." Hearing Wagner for the first time in these early Russian days, before he emigrated to Germany, he sensed that "painting can develop the same energies as music." Though he did not believe that the arts closely parallel each other, (as Grohmann makes quite clear), Kandinsky was aware that painting might achieve a purity and directness similar to music.

By 1910 Kandinsky produced his first wholly abstract work, a water color which, though reproduced in color in this volume, cannot be found in Grohmann's catalogues of works. Kandinsky's development into the purely nonfigurative field was not sudden, nor was it a turn-about-face. As Grohmann remarks, he achieved release from the object "first by reducing the object to its essential elements, and then by gradually shifting to forms derived from this reduction." Finally, the artist produced certain imaginative creations that, as Grohmann suggests, tran-



The shape of flight

The shapes of things that fly have always been determined by the materials they are made of. Feathers form wings that are basically alike for all birds—and membrane forms an entirely different wing for insects. It takes thousands of years, but nature improves its materials and shapes, just as technology improves the materials and shapes of aircraft. But here, the improvements in materials are so rapid that designs become obsolete almost as soon as they become functional.

Today, our aeronautical designers and missile experts work with types of materials that didn't exist just a few short years ago. Steels are probably the most important examples: United States Steel has just developed *five* new types of steel for the missile program. They are called "exotic" steels because they have the almost unbelievable qualities necessary for unearthly flights.

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scend temporal limitations, exhibiting a unity of past, present, and future in a new non-perspective imagery. This is a visual presentation of a world of time-freedom, in accordance with the views of J. Gebser, a modern German theorist whom Grohmann quotes.

It seems clear that Kandinsky, being something of an Easterner, not only understood that man's deepest knowledge is not verbal, but also that every human being should seek to break down the conventional dualism between nature and spirit, or object and subject. He felt that he could achieve this in his art. The older conception of the Western artist toward the world was the same as Western man's lordly attitude to nature: it should be conquered and re-ordered under the guidance of the rational intellect. Kandinsky, with his Oriental slant, sought action from "inner necessity," hoping always to act in accordance with nature's structural laws instead of against them. He wanted to align his own creation with natural creation, if he could.

Kandinsky's own writings are carefully analyzed by the author, not always with success, since Kandinsky's verbal thought and his written works scarcely compare with his pictorial achievements. Clearly enough, he painted better than he knew. Yet he had moments of great insight, notes Grohmann, as when he observed that because colors are intrinsically of different weights, "the variety of the inner surfaces gave my paintings a depth which brilliantly replaced the former perspective depth (Klee's multidimensional simultaneity). I distributed the masses in such a way that no architectural center was visible."

It is extremely interesting to learn from Grohmann that when the *Blaue Reiter Almanac*, edited by Kandinsky and Marc, appeared in 1912, contributors included the composers Arnold Schönberg, Alban Berg, and Anton von Webern, as well as artists like Macke and Marc. The latter, this same year, had engaged in a skirmish with Max Beckmann who, of all people, insisted that "artistic sensibility is linked with naturalism in art" and spoke of "Siberian-Bavarian memorials to disaster," meaning Kandinsky's new abstractions.

Those interested in the cultural history of our time will be fascinated with Professor Grohmann's study, though they may occasionally smile at his careful insistence upon an autonomous German creativity; that is to say, at his hypersensitivity about French influences. He need not have troubled himself over this old quarrel, inasmuch as today everyone with any objectivity is fully aware of the individual originality and brilliance that developed within the German School during this great period of Expressionist activity. Moreover, later men will deal more justly with these matters than we who have lived too closely to them.

Will Grohmann has written an immensely valuable account of this great Russian innovator who made Germany and France his homes. Wassily Kandinsky is even now one of the chief leaders of modern art, although he has been dead for fourteen years. A visitor to the studios of artists here and abroad will find no livelier influence upon the thought and imagery of our young painters. New understanding of Kandinsky's art has recently been offered through the display in Munich of the marvelous collection of Kandinsky's works at the Städtische Galerie, the gift to that city of his friend Gäbrielle Münter. Fortunately for Americans, an equally important collection of Kandinsky's art is housed in the Guggenheim Museum in New York, acquired for this institution by its former directress, Baroness Hilla Rebay.

—GORDON BAILEY WASHBURN

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